REMARKS/ARGUMENTS

Claims 1, 3-6, 8-10 and 19 are amended. Claims 11-18 are cancelled. Claims 20 and 21 are added. Claims 1, 3-10, 19-21 are pending.

Figs. 13, 14, 15, 16, 17 and 18 are amended and relabeled as "Prior Art". The attached sheets of formal drawings replaces the original sheets including Figs. 13, 14, 15, 16, 17 and 18.

Independent claim 1, as amended, is directed to a substrate processing apparatus including an atmosphere blocking member arranged oppositely and proximately to a substrate with a processing solution discharge port and an inner gas discharge port discharging a processing solution and gas to the central portion of said surface of said substrate, respectively, and an outer gas discharge port formed to annularly enclose the inner gas discharge port arranged eccentrically to the center of the substrate.

The present invention is quite effective in expelling droplets remaining on a substrate as described in the Summary of the Invention section of the present application. According to the apparatus defined in claim 1, droplets remaining in the vicinity of the central portion of the substrate are first expelled to the peripheral portion of the substrate by discharging gas from an inner gas discharge port to the central portion of the substrate. More specifically, the gas inner discharge port, arranged eccentrically to the center of the substrate, allows gas to flow onto the center of the substrate on which centrifugal force caused by the rotation of the substrate is conventionally difficult to act, so that the droplets are expelled effectively. The droplets are then effectively removed from the peripheral portion of the substrate by further discharging gas from the outer gas discharge port annularly enclosing the inner gas discharge port.

In independent claim 19, as amended, there is recited: a processing solution discharge port and an inner gas discharge port arranged on an inner shaft of a support cylinder supporting

an atmosphere blocking member, the inner gas discharge port being arranged eccentrically to the center of the substrate, and an outer gas discharge port is interposed between the inner shaft and the support cylinder. By inserting the inner shaft into a hollow portion of the support cylinder, there is formed an annular gap between the outer peripheral surface of the inner shaft and inner peripheral surface of the support cylinder. Therefore, similar to independent claim 1, claim 19 recites an outer gas discharge port interposed between the inner gas discharge port (arranged on the inner shaft) and the support cylinder, where the inner gas discharge port is arranged eccentrically to the center of the substrate.

Newly presented claim 20 recites an atmosphere blocking member arranged oppositely and proximately to a substrate is formed with a processing solution discharge port and an inner gas discharge port discharging a processing solution and gas to the central portion of the substrate, respectively, and an outer gas discharge port is formed inclined so as to annularly enclose the gas discharge port for discharging gas downwardly and outwardly. According to the invention defined in claim 20, droplets expelled from the central portion of the substrate may be effectively removed from the peripheral portion of the substrate at a smaller gas flow rate.

In contrast, Ono et al. (US2002/0074020) cited in an Office Action dated December 30, 2005, discloses a technique for providing spin drying to a wafer W that is rotated at a high speed, while supplying N^2 gas for preventing oxidations from taking place at the face of the wafer W. See Ono Abstract. According to the technique disclosed in Ono, however, the N^2 gas is supplied more on the outer peripheral portion than on the central portion of the wafer W. The injection openings of the Ono apparatus are therefore formed as shown in Figs. 4(A) to 4(C). Ono fails to disclose or suggest the idea of forming an outer gas discharge port so as to annularly enclose an inner gas discharge port arranged eccentrically to the center of a substrate, as defined in the

claims of the present application.

Turning now to Tsuchiya et al. (U.S. Patent No. 6,810,888), also cited in an Office Action dated December 30, 2005, this reference describes providing treatment liquid pouring means 76 for pouring chemical liquid and cleaning liquid onto a wafer W being rotated. This reference also teaches that the treatment liquid pouring means 76 has three pouring pipes 76a, 76b and 76c used depending on the type of chemical liquid. However, Tsuchiya also fails to disclose or suggest the idea of forming an outer gas discharge port so as to annularly enclose an inner gas discharge port arranged eccentrically to the center of a substrate as defined in the claims of the present application.

In conclusion, the inventions recited in independent claims 1, 19 and 20 of the present application are not rendered obvious by Ono and Tsuchiya, regardless of whether their teachings are considered alone or in combination.

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